

Notice No.7

Rules and Regulations for the Classification of Naval Ships, January 2022

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: December 2022

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Volume 2, Part 7, Chapter 1, Section 5	1 January 2023	1 January 2023
Volume 2, Part 7, Chapter 2, Section 3	1 January 2023	N/A
Volume 2, Part 9, Chapter 1, Sections 1 & 2	1 January 2023	N/A
Volume 2, Part 9, Chapter 3, Sections 4, 5 & 7	1 January 2023	N/A
Volume 2, Part 9, Chapter 12, Section 1	1 January 2023	N/A



Volume 2, Part 7, Chapter 1 Piping Design Requirements

■ Section 5 Pipe Joints

5.12 Piping for gaseous fire-extinguishing systems

5.12.3 Where a low-pressure CO₂ system is fitted, the piping system is to be designed in such a way that the CO₂ pressure at the nozzles is not less than 1 N/mm².

Existing paragraphs 5.12.3 to 5.12.10 have been renumbered 5.12.4 to 5.12.11.

Volume 2, Part 7, Chapter 2 Ship Piping Systems

■ Section 3 Drainage of compartments, other than machinery spaces

3.3 Fore and after peaks

3.3.4 Pipes piercing the collision bulkhead are to be fitted with suitable screw-down valves operable from above the damage control deck. The valve chest is to be fitted to the aft side of the bulkhead unless the use of that space precludes the valve being readily accessible in all service conditions, in which case the valve chest may be secured to the bulkhead inside the fore peak. An indicator is to be provided to show whether the valve is open or closed.

3.5 Maintenance of integrity of bulkheads

3.5.2 The scupper tank air pipe is to be led to above the bulkhead deck vertical limit of watertight integrity, and provision is to be made for ascertaining the level of water in the tank.

Volume 2, Part 9, Chapter 1 General Requirements for the Design and Construction of Electrotechnical Systems

■ Section 1 General requirements

1.4 Documentation required for design review

(Part only shown)

1.4.27 **Lithium battery systems.** In addition to the plans and information required by [Vol 2, Pt 9, Ch 1, 1.4 Documentation required for design review 1.4.2](#), the following information is also to be submitted:

- (k) Fire integrity plans for the battery space (including penetrations drawings), contiguous spaces and means of escape from the battery space.
- (l) Test schedule for works testing which is to include methods of testing and acceptance criteria.

1.6 Surveys

(Part only shown)

1.6.2 The following equipment, where intended for use for Mobility or Ship Type systems, is to be surveyed by the Surveyors during manufacture and testing:

- ...
- Switchboards and section boards; and
- UPS units of 50 kVA and over; and
- Lithium Battery Systems of capacity 50 kWh and over including associated Battery Management Systems.

■ Section 2 System level requirements

2.2 Design, construction and location

2.2.10 All electrical equipment is to be constructed or selected and installed such that:

- (a) live parts cannot be inadvertently touched, unless they are supplied at the safety voltage specified in [Vol 2, Pt 9, Ch 1, 2.4 Earthing and bonding 2.4.2.\(h\)](#); and
- (b) it does not cause injury when handled or touched in the normal manner; and
- (c) it is unaffected by any water, steam or oil and oil vapour to which it is likely to be exposed.

Where not exposed to direct liquid spray, electrical equipment having, as a minimum, the degrees of protection as specified in IEC 60092-201 for the relevant location will satisfy these requirements. For high voltage electrical equipment, the degrees of protection as specified in IEC 60092-503 *Electrical installations in ships – Part 503: Special features – AC supply systems with voltages in the range of above 1kV up to and including 36kV* for the relevant location will satisfy these requirements. Where the equipment may be exposed to direct liquid spray the degree of protection is not to be less than IPX4. Where the equipment may be exposed to possible liquid immersion, the degree of protection is not to be less than IPX7.

Volume 2, Part 9, Chapter 3 Electrical Power Distribution and Equipment

■ Section 4 Supply and distribution

4.1 Systems of supply and distribution

(Part only shown)

4.1.3 System voltages for both alternating current and direct current in general are not to exceed:

- 35000 V for power distribution;
- 15000 V for generation and propulsion and power distribution;
- 500 V for cooking and heating equipment permanently connected to fixed wiring;
- 250 V for lighting, heaters in cabins and crew and embarked personnel rooms, and other applications not mentioned above.

4.3 Isolation and switching

4.3.9 High voltage switchgear and controlgear assemblies that use liquids or gasses other than ambient air as an insulating medium are to be installed in spaces that are adequately protected according to the following requirements:

- The space is to be provided with ventilation to ensure that gasses cannot accumulate unnoticed.
- Leakages of liquid are to be properly collected and contained.
- An alarm is to be initiated at a manned control station to indicate when the insulating medium has reduced to an abnormally low level. Interlocks are to be provided to ensure that the switchgear or controlgear cannot be closed when this alarm is active. The interlocks are to ensure that services essential for the propulsion and safety of the ship are not disconnected in the event of this alarm being activated.

■ Section 5 Switchgear and controlgear assemblies

5.1 General requirements

(Part only shown)

5.1.1 Switchgear and controlgear assemblies and their components are to comply with the following standards as appropriate for the nominal voltage, and amended where necessary for ambient temperature and other environmental conditions:

- (d) IEC 60092-503: *Electrical installations in ships – Part 503: Special features – AC supply systems with voltages in the range of above 1 kV up to and including 45 36kV*;

5.7 Creepage and clearance distances

(Part only shown)

Table 3.5.1 Minimum clearance distances

Nominal Voltage (V)	Minimum clearance distance (mm)		
	Verified assemblies (See Note 2)		Non-verified assemblies
	Main switchboards	Other switchgear and controlgear	Main switchboards and other switch and controlgear
≤15 000	See Note 3	See Note 3	160
≤22 000	See Note 3	See Note 3	220
≤33 000	See Note 3	See Note 3	320
≤35 000	See Note 3	See Note 3	360

Note 3. Clearance distances, with reference to the applicable relevant National or International Standards, are to be submitted for approval, see [Vol 2, Pt 9, Ch 1, 1.5 Documentation required for supporting evidence 1.5.3](#).

(Part only shown)

Table 3.5.2 Minimum creepage distances

Nominal Voltage (V)	Minimum creepage distance (mm)	
	Main switchboards	Other switchgear and controlgear
≤15 000	See Note 2	See Note 2
≤35 000	See Note 2	See Note 2

Note 2. Creepage distances, with reference to the applicable relevant National or International Standards, are to be submitted for approval, see [Vol 2, Pt 9, Ch 1, 1.5 Documentation required for supporting evidence 1.5.3](#).

(Part only shown)

5.7.3 For assemblies with a rated voltage above 1kV, the requirement of [Vol 2, Pt 9, Ch 3, 5.7 Creepage and clearance distances 5.7.1](#) may be met by complying with IEC 60092-503: *Electrical installations in ships – Part 503: Special features – AC supply systems with voltages in the range of above 1 kV up to and including 45 36kV*.

■ Section 7 Converter equipment

7.1 Transformers

(Part only shown)

7.1.2 Transformers are to comply with the requirements of the following standards as appropriate:

- (b) IEC 60092-503: *Electrical installations in ships – Part 503: Special features – AC supply systems with voltages in the range of above 1 kV up to and including 45 36kV*; or

Volume 2, Part 9, Chapter 12 Testing and Trials

■ Section 1 Testing and trials

1.1 Testing

Table 12.1.1 Test voltage

Rated voltage, U_n U_n V	Test voltage a.c. (r.m.s.), V
$U_n \leq 60$	500
$60 < U_n \leq 1000$	$2 \times U_n + 1000$
$1000 < U_n \leq 2500$	6500
$2500 < U_n \leq 3500$	10000
$3500 < U_n \leq 7200$	20000
$7200 < U_n \leq 12000$	28000
$12000 < U_n \leq 15000$	38000
$15000 < U_n \leq 22000$	50000
$22000 < U_n \leq 33000$	70000
$33000 < U_n \leq 35000$	80000

Table 12.1.2 Test voltage and minimum insulation

Rated voltage U_n V	Minimum voltage of the tests, V	Minimum insulation resistance, M Ω
$U_n \leq 250$	$2 \times U_n$	1
$250 < U_n \leq 1000$	500	1
$1000 < U_n \leq 7200$	1000	$\frac{U_n}{1000} + 1$
$7200 < U_n \leq 15000$	5000	$\frac{U_n}{1000} + 1$
$U_n > 15000$	5000	$\frac{U_n}{1000} + 1$

Table 12.1.3 Test/Trials requirements on lithium battery systems

Item	Tests	Trials
Discharge performance validation	✗	
Capacity validation Performance test *	X	X
Internal DC resistance test	✗	
Overcharge control test	✗	
Cell balancing functional test	✗	
Sensor failures test	X	
State of Charge (SOC) validation indication test *	X	X
State of Health (SOH) validation indication test*	X	X
High voltage test	X	
Insulation resistance test	X	
Alarms and safeguards required by Vol.2, Pt.9, Ch.2, Sec.7 Table 2.7.1 Lithium battery system: alarms and safeguards	X	X
Emergency trip functional test *	✗	✗
Over-temperature protection test	✗	✗
Over-voltage protection test	✗	✗

Under-voltage protection test	X	X
Communication failure between Battery Management System (BMS) and external charge control system test ±	X	X
Pressure relief valve test	X	
Additional safety functions tests and trials of the battery management system	X	X
Verification of thermal management at maximum achievable load under service conditions during trials		X
Tests of the safety functions in the battery compartment, i.e. fire detection and extinguishing, gas detection, off-gas exhaust/extraction, ventilation, etc., as applicable to the installation.		X
Note . Items marked * are required to be tested annually.		

1.2 Trials

(Part only shown)

1.2.7 It is to be demonstrated that the Rules have been complied with in respect of:

- (a) satisfactory performance of each generator power source supporting Mobility or Ship type systems, including its auxiliary services, throughout a run at full rated load;
- (j) the operation of the propulsion system with the harmonic filter removed from circuit is to be verified in accordance with the design intent, see [Vol 2, Pt 4, Ch 5, 4.5 Harmonic filtering for propulsion 4.5.2](#); any operational and functional limitations are to be documented and details retained on board; and
- (k) operation of power management for electric propulsion; and
- (l) satisfactory performance of each Mobility or Ship Type system energy storage arrangement, including its auxiliary services, throughout a run at full-rated charging capacity.

1.7 Unattended machinery space operation - UMS notation

(Part only shown)

1.7.1 In addition to the tests required by [Vol 2, Pt 9, Ch 7 Control, Alerts and Safety Systems](#), the suitability of the installation for operation in the unattended mode is to be demonstrated during sea trials over a four to six hour period observing the following:

- (c) Stable operation in, and transition between, power plant configuration modes which are not considered as manual operations (see [Vol 2, Pt 9, Ch 1, 1.4 Documentation required for design review](#)). The demonstration time of each operating mode for the electrical power system is to be sufficient to demonstrate that the transitions can be performed with an unattended engine room, and a stable running condition achieved.

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